Foundations of Computer Science

It is required to implement polynomials, which may contain any number of different variables, with the operations of addition and equality test.

- Computing that the sum of \( xy^2 + 2xz - y \) and \( y + 4xw - xz \) is \( xz + xy^2 + 4xw \) is an example of polynomial addition.

- Determining that \( xy + z^2 \) equals \( zz + yx \) is an example of an equality test.

(a) Design a suitable representation of polynomials, in ML. Justify the choices you make. [6 marks]

(b) Describe how you would implement addition and the equality test, and express their efficiency using \( O \)-notation. It is not necessary to present ML code. [4 marks]